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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/685,655

10/14/2003

Sung-Jin Kim

8750-038

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11/15/2006

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EXAMINER

VU, HUNG K

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/685,655 | KIM ET AL. | |
| | Examiner | Art Unit | |
| | Hung Vu | 2811 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-16 and 23-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-16, 23, 25-27, 33 and 34 is/are allowed.
- 6) ☒ Claim(s) 24 and 28-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicants' communication filed 09/05/06 has been carefully considered by the examiner. The arguments advanced therein are persuasive with respect to the rejections of record, and some of those rejections are accordingly withdrawn. In view of a further search, however, a new rejection is set forth further below. This action is not made final.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show a vertical plane running along the length of the third upper interconnection line and the fourth upper interconnection line bisects the third upper interconnection line and the fourth upper interconnection line, as recited in claim 24, a first vertical plane running along the length of the first lower interconnection line and the first upper interconnection line bisects the first lower interconnection line and the first upper interconnection line, a second vertical plane running along the length of the second lower interconnection line and the second upper interconnection line bisects the second lower interconnection line and the second upper interconnection line, a third vertical plane running along the length of the third lower interconnection line and the third upper interconnection line bisects the third lower interconnection line and the third upper interconnection line, as recited in claim 28, as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior

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version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 24 and 28-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification does not disclose the vertical plane running along the length of the third upper interconnection line and the fourth upper interconnection line bisects the third upper

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interconnection line and the fourth upper interconnection line, as recited in claim 24, the first vertical plane running along the length of the first lower interconnection line and the first upper interconnection line bisects the first lower interconnection line and the first upper interconnection line, the second vertical plane running along the length of the second lower interconnection line and the second upper interconnection line bisects the second lower interconnection line and the second upper interconnection line, the third vertical plane running along the length of the third lower interconnection line and the third upper interconnection line bisects the third lower interconnection line and the third upper interconnection line, as recited in claim 28; and the third vertical plane bisects a fourth upper interconnection line, as recited in claim 29.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 28-32, insofar as in compliance with 35 USC 112, are rejected under 35 U.S.C. 102(b) as being anticipated by Koubuchi et al. (PN 6,261,883).

Koubuchi et al. discloses, as shown in Figures 1-14, a semiconductor device comprising:

lower interconnection lines (10,11) disposed parallel to each other on a semiconductor substrate (1), the lower interconnection lines including a first lower interconnection line (10), a second lower interconnection line (10), and a third lower interconnection line (11) between the

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first and second lower interconnection lines, the first and second lower interconnection lines extending past an end of the third lower interconnection line;

an interlayer insulating layer (12) disposed on a surface of the substrate having the lower interconnection lines;

upper interconnection lines (14,15) disposed parallel to each other on the insulating layer, the upper interconnection lines including a first upper interconnection line (14), a second upper interconnection line (14), and a third upper interconnection line (15) between the first and second upper interconnection lines, the first, second and third upper interconnection lines aligned with the first, second and third lower interconnection lines such that a first vertical plane (imaginary plane) running along the length of the first lower interconnection line and the first upper interconnection line bisects the first lower interconnection line and the first upper interconnection line, a second vertical plane (imaginary plane) running along the length of the second lower interconnection line and the second upper interconnection line bisects the second lower interconnection line and the second upper interconnection line, a third vertical plane (imaginary plane) running along the length of the third lower interconnection line and the third upper interconnection line bisects the third lower interconnection line and the third upper interconnection line [Col. 12, lines 54-61 and Col. 15, lines 7-17]. Note that Koubuchi et al. discloses the upper interconnection lines (14,15) are formed similar as to the lower interconnection lines (10,11), therefore, it is inherent that the upper interconnection lines (14,15) are formed directly on and aligned with the lower interconnection lines (10,11).

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Regarding claim 29, Koubuchi et al. discloses the upper interconnection lines further comprising a fourth upper interconnection line that is also bisected in a lengthwise direction by the third vertical plane, an end of the fourth upper interconnection line and the end of the third upper interconnection line separated from each other by a distance that is greater than a longest focus distance.

Regarding claim 30, Koubuchi et al. discloses the lower interconnection lines comprise a layer chosen from the group consisting of poly-silicon layer, a silicide layer, and a metal layer (aluminum, copper) [Col. 12, lines 54-61].

Regarding claim 31, Koubuchi et al. discloses the interlayer insulating layer comprises at least one layer selected from the group consisting of SOG and TEOS [Col. 14, line 41 – Col. 15, line 7].

Regarding claim 32, Koubuchi et al. discloses the lower interconnection lines comprise a layer chosen from the group consisting of poly-silicon layer, a silicide layer, and a metal layer (aluminum, copper) [Col. 12, lines 54-61 and Col. 15, lines 7-17].

Allowable Subject Matter

5. Claims 12-16, 23, 25-27, 33 and 34 are allowed.

Response to Arguments

6. Applicant's arguments filed 09/05/06 have been fully considered but they are not persuasive.

It is argued, at pages 7-9 of the Remarks, that a vertical plane need not be explicitly shown in Figure 5B for the invention defined in claims 24 and 28. This argument is not convincing because the specification and the drawings does not disclose and/or shown the vertical plane running along the interconnection lines and bisects the interconnection lines.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Vu whose telephone number is (571) 272-1666. The examiner can normally be reached on Monday to Thursday 6:00-4:30.

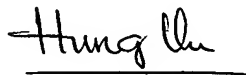
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard T. Elms can be reached on (571) 272 - 1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Vu

November 1, 2006

A handwritten signature in black ink, appearing to read "Hung Vu", is written over a horizontal line.

Hung Vu

Primary Examiner